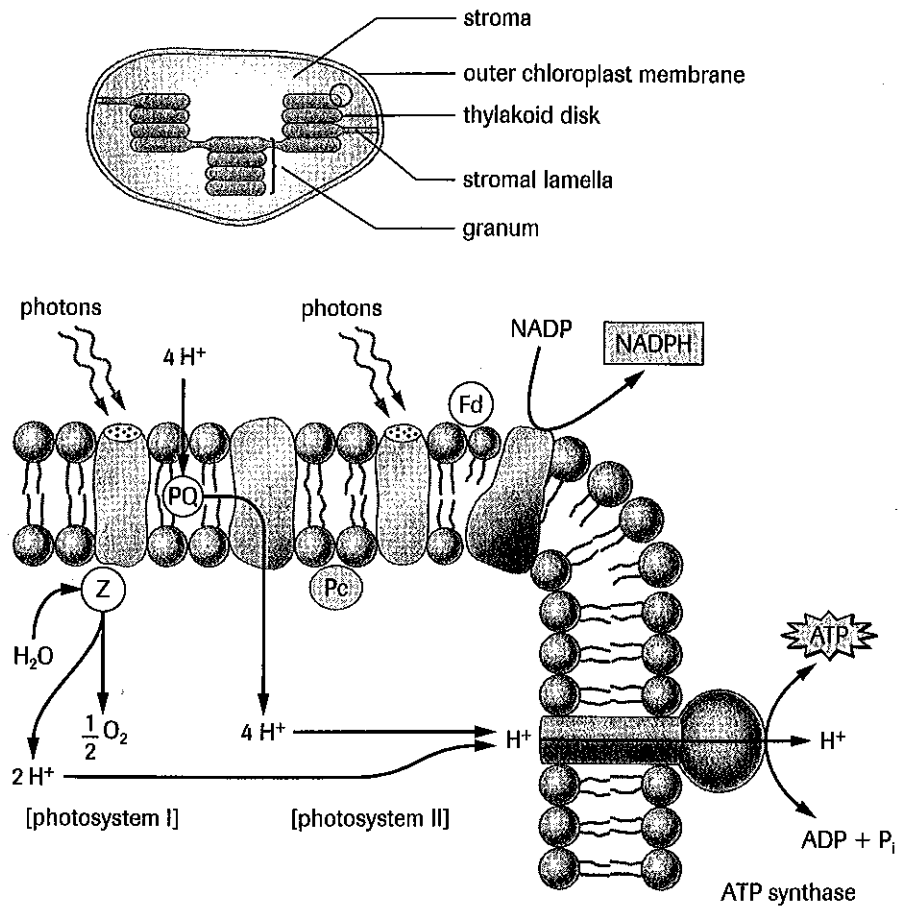


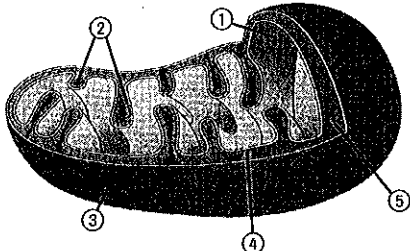
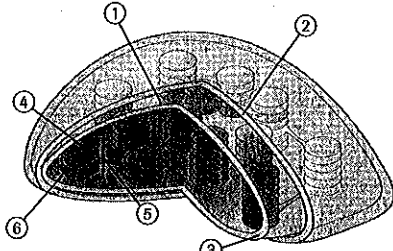
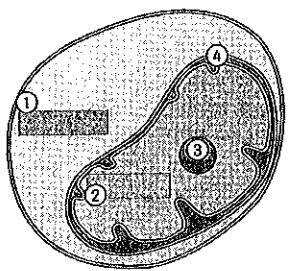
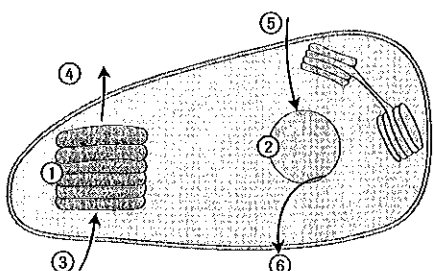
The Light Reactions, Solution

Label the major structures of the chloroplast. Label the molecules involved in the light reactions of photosynthesis.



Comparing Chloroplasts and Mitochondria, Solution

Using the textbook and other sources of information, complete the table below comparing chloroplasts and mitochondria. Add labels to the diagrams and the process overviews given.

Criteria	Mitochondria	Chloroplasts
Diagrams	 <p>1-matrix 2-cristae 3-outer membrane 4-inner membrane 5-intermembrane space</p>	 <p>1-intermembrane space 2-outer membrane 3-inner membrane 4-thylakoid 5-granum 6-stroma</p>
Structural comparisons	<p>Double membrane, including a smooth outer membrane and a highly folded inner membrane-cristae; these cristae are enzyme- and protein-rich sites of electron transport and chemiosmosis; inner matrix site of many respiration pathways including Krebs cycle</p>	<p>Double membrane, including smooth outer and inner membrane plus highly organized membrane-bound sacs arranged in stacks (thylakoid within grana); the thylakoid membranes are also enzyme- and protein-rich sites of electron transport and chemiosmosis; stroma found within inner membrane and intermembrane space found between two membrane layers</p>
Overview of metabolic process	 <p>1-glycolysis 2-pyruvate oxidation 3-Krebs cycle 4-electron transport and chemiosmosis</p>	 <p>1-light reactions 2-Calvin cycle 3-H₂O 4-O₂ 5-CO₂ 6-sugar</p>

(continued)

Criteria	Mitochondria	Chloroplasts
Comparison of Reactants and Products	Reactants: glucose, oxygen (later), Products: water, carbon dioxide, ATP	Reactants: water, carbon dioxide Products: glucose, oxygen
Comparison of Pathways	Initially, glucose is broken down into two 3-carbon sugars. These are further broken down to carbon dioxide, with ATP being produced, and water (using up oxygen) released.	Initially, sunlight is used to produce ATP and NADPH, which are then used to build carbon dioxide up into a 3-carbon intermediate. These 3-carbon intermediates can be converted into other carbohydrates.